

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-06				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-16-011		Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1		Title of Work Assignment/SF Site Name Analyses 2017 Review of RWQC						
Contractor ICF INCORPORATED, L.L.C.				Specify Section and paragraph of Contract SOW 3.1, 3.3, 3.4, 3.6, 3.8						
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 07/01/2017 To 06/30/2018				
Comments: Immediate Start Authorized										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee			LOE:			
Cumulative Approved:				Cost/Fee			LOE:			
Work Assignment Manager Name Sharon Nappier <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-0740 FAX Number:			
Project Officer Name Shirley Harrison <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:			
Other Agency Official Name Shirley Harrison <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:			
Contracting Official Name Noelle Mills <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2171 FAX Number:			

PERFORMANCE WORK STATEMENT (PWS)
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-06

Title: Analyses for 2017 Review of the 2012 Recreational Water Quality Criteria

Work Assignment Contracting Officer's Representative (WACOR):

Sharon Nappier (Mail Code 4304T)
Health and Ecological Criteria Division
Office of Water, Office of Science and Technology
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone (202) 566-0740
E-mail: nappier.sharon@epa.gov

Alternate WACOR:

Shamima Akhter (Mail Code 4304T)
Health and Ecological Criteria Division
Office of Water, Office of Science and Technology
1200 Pennsylvania Ave, N.W.
Washington, DC 20460
Phone (202) 566-1341
E-mail: akhter.shamima@epa.gov

Period of Performance: July 1, 2017 through June 30, 2018

Contractor PWS: 3.1, 3.3, 3.4, 3.6, 3.8

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

Background:

In 2012, the Environmental Protection Agency (EPA) published Recreational Water Quality Criteria (RWQC) to protect the public from exposure to pathogens in waters designated for primary contact recreational uses. These criteria included an analysis of research, including studies evaluating the association between illness and fecal contamination in these waters. The 2012 RWQC provide two sets of numeric concentration thresholds based on the use of two bacterial indicators, *E. coli* and enterococci. Illness rates upon which these recommendations are based include the use of the National Epidemiological and Environmental Assessment of Recreational Water (NEEAR) study and epidemiological studies used to support the 1986 Ambient Water Quality Criteria.

The Beaches Environmental Assessment and Coastal Health (BEACH) Act of 2000 requires that EPA review and as necessary revise recreational water quality criteria not later than five years after the date of publication. EPA is currently undertaking this review in 2017. The overall goal of the project is to develop an EPA report that describes available information and includes EPA's assessment of whether revisions to the 2012 criteria are necessary to ensure the protection of recreational waters. This work assignment (WA) will assist in one aspect of EPA's overall 2017 review effort: evaluate molecular methods for use in Recreational Water Quality Criteria recommendations. Specifically, EPA is interested in understanding: 1) where molecular methods (i.e., Quantitative Polymerase Chain Reaction (qPCR) methods) have been applied since 2010; 2) the rate of inhibition when using molecular methods in those waterbodies; 3) method improvements that have reduced inhibition; and 4) method or water matrix attributes improvements that have reduced inhibition; and 4) method or water matrix attributes (e.g., turbidity) and dynamics of fecal contamination that may continue to contribute to poor performance or increased inhibition.

Quality Assurance:

The tasks 2 and 3 in this work assignment require the use of existing data and application of existing, peer reviewed models. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The contractor shall comply with the March 2007 EPA approved pQAPP. The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the approved pQAPP. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment-specific QAPP supplement, which must be approved by the EPA before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

Performance Work Statement: The scope of work in this assignment will fall under the following task areas:

Task 1: Work plan and monthly progress reports

Task 1.1 Work Plan

The contractor shall develop a detail work plan and cost estimate for each task outlined in this work assignment. The plan should contain, but not limited to, work-flowchart, elaborate schedule (task-wise), staffing plan and qualifications of proposed staff, budget for each task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than \$100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs delineated by the tasks in this WA. These reports should also indicate an estimate for the next month by task and if any lagging costs are expected. EPA realizes these estimates are just approximate values and is interested in having this information for internal budgeting purposes.

Task 1.2 Information Quality Guidelines(IQG)

The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines (IQG) (www.epa.gov/quality/guidelines-ensuring-and-maximizing-quality-objectivity-utility-and-integrity-information). The contractor shall complete the OW IQG Checklist as needed for each deliverable from this work assignment as they may be used in Agency decision-making and/or will be publicly available documents. As requested by the WACOR, the contractor shall have a teleconference with the WACOR to discuss the Guidelines and the contractor's role in completing the OW IQG checklist. The WACOR will provide the checklist to the contractor. At the end of the work assignment, the contractor shall provide a memorandum describing how the planned product(s) developed meet the requirements of the OW's IQG checklist. As part of that memo, the contractor shall document the quality assurance procedures it used in developing the deliverables under this work assignment. The contractor shall provide the memo at the time it delivers the Final Summary Report.

TASK 2 – Analyses of Molecular Methods for use in RWQC recommendations

Building upon efforts in previous work assignments, the contractor shall develop analyses of current molecular methods (i.e., qPCR methods) to support EPA's 2017 review of the 2012 RWQC. EPA is interested in understanding: 1) where molecular methods have been applied since 2010; 2) the rate of inhibition when using molecular methods in those waterbodies; 3) method improvements that have reduced inhibition; and 4) method or water matrix attributes (e.g., turbidity) and dynamics of fecal

contamination that may continue to contribute to poor method performance or increased inhibition.

Molecular qPCR methods under consideration include, but are not limited to, *Enterococcus* spp. qPCR (Method 1609); *Enterococcus* spp. qPCR (Method 1611); *Bacteroidales* spp. qPCR (Method B); and *E. coli* spp. qPCR. Adaptations of the qPCR method, such as digital droplet PCR, may be considered if adequate data are available. The contractor shall conduct and coordinate all aspects of the assessment with the WACOR.

Task 2.1 Analysis of Molecular Methods

The contractor, in coordination with the WACOR, shall evaluate the molecular methods informed by the systematic literature search completed in the previous work assignment. In tabular form, the contractor shall capture information such as: study location; sampling time; waterbody type; analytical method(s) applied; how inhibition was controlled; contamination source(s) and dynamics (e.g., wet-weather driven); water quality results; percent of samples inhibited; limit of quantitation; and percent recovery. Based on technical direction from the WACOR, the contractor shall analyze the information for overall trends and results, which may require statistical analyses.

Task 2.2 Report of Molecular Methods Analysis

The contractor shall collate the results from tasks 2.1-2.2 work and generate as both an EPA report for internal review and as a peer-review publication manuscript to be submitted to the WACOR. The WACOR anticipates there will be several internal reviews of both the EPA report and manuscript prior to publication. The contractor shall revise the reports based on comments received from the WACOR. Additional analyses may be needed based on the comments received. The contractor shall also be responsible for responding to reviewer comments and completing final edits. At the WACOR's request, the contractor shall make the final EPA reports 508 compliant.

Travel: Local travel is anticipated for this Task. No contractor travel out of the Washington, D.C. metro area is required.

Task Area 3 - General Project Support

The contractor shall, based on technical direction given by the WACOR, provide support in preparing interim project updates and other materials for internal and external audiences. Updates and other support materials may include, but are not limited to, short briefing documents, assistance with inclusion of text and results into the larger 2017 Review report, white papers, and PowerPoint presentations. The contractors may also be requested to participate in and/or conduct briefings. A weekly update call with the WACOR will be required for this work assignment, as needed.

Some meetings may require contractor support and/or attendance for note-taking, presentations, and/or meeting preparation materials. Details on travel dates and locations, for up to two trips, will be provided by the WACOR through technical direction, as further information becomes available.

Travel: Travel may be needed as deemed necessary by the WACOR.

Knowledge and Skills Required: The contractor shall have expertise in preparing the aforementioned materials and be knowledgeable with the various fields of discipline discussed in this work assignment. The contractor shall have practical experience in conducting microbial analyses in the laboratory and have advanced credentials in environmental microbiology. The contractor shall be familiar with viral, protozoan, and bacterial indicators and pathogens, microbiological analytical methods (including molecular techniques), biostatistics, environmental engineering, and EPA's 2012 Recreational Water Quality Criteria. The contractor shall be familiar with the interpretation of indicator and pathogen monitoring results and how those results are related to risk estimates and public health protection.

General Requirements of the Work Assignment and Schedule:

Due Dates: The contractor shall provide due dates that are mutually acceptable with the WACOR. The contractor shall notify the WACOR in advance, if a due date will not be met and request a revised date.

Delays: The contractor shall make every effort to ensure there are no contractor-caused delays. If a delay is inevitable, it is the contractor's responsibility to notify the WACOR at the first sign of said delay. A revised schedule will then be worked out.

Draft Documents: The contractor may be required to submit draft documents. Draft documents shall be prepared in an electronic format compatible with current Microsoft products. The WACOR will provide comments on draft submissions prior to submission of final documents.

Final Documents: The contractor shall submit final documents both electronically and in hardcopy to WACOR.

Milestone/Deliverable Table

Task	Task #	Milestones and Due Dates
Task 1: Work plan, monthly progress reports and quality assurance		
Workplan	1.1	Per contract requirements
Information Quality Guidelines	1.2	Discuss with WACOR within 20 calendar days after receipt of work assignment. IQG checklists due with final deliverable (can be included with QA materials).

Task 2: Analyses of molecular methods for use in RWQC recommendations		Initial planning meeting to be held within 5 calendar days after receipt of work assignment. Subsequent meetings to be held roughly weekly, as needed.
Molecular Methods - Table	2.2	Draft completed – Future edits within 2 days of receiving edits from the WACOR
Analysis of Molecular Methods – Statistical Analysis	2.2	Within 1 week of completing the Analysis of Molecular Methods - Table
Report of Molecular Methods Analysis and Peer-reviewed Publications	2.3	<p>Unless specified by the WACOR, the schedule for report and manuscript deliverables is as follows (please note that not all draft deliverable milestones will apply to all deliverables):</p> <p>Reports: Draft for Mgmt review – 2 weeks after receiving WACOR comments; Final for Mgmt review – 2 weeks after receiving peer review comments; Final for publication (if applicable– 2 weeks after receiving EPA Mgmt comments.</p> <p>Manuscripts: Draft for Mgmt review – 2 weeks after receiving WACOR comments; Final – 1 week after receiving EPA Mgmt comments and approval.</p>
Task 3: General Project Support		As requested via technical direction

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment </div> <div style="text-align: right;"> Work Assignment Number 1-06 </div> </div>										
<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001										
Contract Number EP-C-16-011		Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1		Title of Work Assignment/SF Site Name Analyses 2017 Review of RWQC						
Contractor ICF Incorporated, L.L.C.			Specify Section and paragraph of Contract SOW 3.1, 3.3, 3.4, 3.6, 3.8							
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval			Period of Performance From 07/01/2017 To 06/30/2018							
Comments: The purpose of this work assignment amendment is to provide additional LOE to support efforts related to: finalizing deliverables and associated manuscripts and providing general project support.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period: 11/01/2016 To 06/30/2018		Cost/Fee:				LOE:				
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee			LOE:			
Cumulative Approved:				Cost/Fee			LOE:			
Work Assignment Manager Name Sharon Nappier _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 202-566-0740			
							FAX Number:			
Project Officer Name Shirley Harrison _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name Shirley Harrison _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 202-566-1107			
							FAX Number:			
Contracting Official Name Noelle Mills _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 513-487-2171			
							FAX Number:			

PERFORMANCE WORK STATEMENT (PWS)
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-06 Amendment 1

Title: Analyses for 2017 Review of the 2012 Recreational Water Quality Criteria

Work Assignment Contracting Officer's Representative (WACOR):

Sharon Nappier (Mail Code 4304T)
Health and Ecological Criteria Division
Office of Water, Office of Science and Technology
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone (202) 566-0740
E-mail: nappier.sharon@epa.gov

Alternate WACOR:

Shamima Akhter (Mail Code 4304T)
Health and Ecological Criteria Division
Office of Water, Office of Science and Technology
1200 Pennsylvania Ave, N.W.
Washington, DC 20460
Phone (202) 566-1341
E-mail: akhter.shamima@epa.gov

Period of Performance: Date of Issuance through June 30, 2018

Contractor PWS: 3.1, 3.3, 3.4, 3.6, 3.8

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

Purpose of the Amendment: The purpose of this work assignment amendment is to provide additional LOE to support efforts related to: finalizing deliverables and associated manuscripts and providing general project support. *Language in Tasks 1, 2, and 3 remain the same, no change. No additional travel has been added.* The contractor shall submit a revised cost estimate within 5 days of this amendment.

Milestone/Deliverable Table

Task	Task #	Milestones and Due Dates
Task 1: Work plan, monthly progress reports and quality assurance		
Workplan – revised cost estimate	1.1	Within 5 calendar days after receipt of work assignment amendment
Information Quality Guidelines	1.2	Discuss with WACOR within 20 calendar days after receipt of work assignment. IQG checklists due with final deliverable (can be included with QA materials).
Task 2: Analyses of molecular methods for use in RWQC recommendations		Initial planning meeting to be held within 5 calendar days after receipt of work assignment. Subsequent meetings to be held roughly weekly, as needed.
Molecular Methods - Table	2.2	Draft completed – Future edits within 2 days of receiving edits from the WACOR
Analysis of Molecular Methods – Statistical Analysis	2.2	Within 1 week of completing the Analysis of Molecular Methods - Table
Report of Molecular Methods Analysis and Peer-reviewed Publications	2.3	<p>Unless specified by the WACOR, the schedule for report and manuscript deliverables is as follows (please note that not all draft deliverable milestones will apply to all deliverables):</p> <p>Reports: Draft for Mgmt review – 1 week after receiving WACOR comments; Final for Mgmt review – 1 week after receiving peer review comments; Final for publication (if applicable) – 2 weeks after receiving EPA Mgmt comments.</p> <p>Manuscripts: Draft for Mgmt review – 1 week after receiving WACOR comments; Final – 1 week after receiving EPA Mgmt comments and approval.</p>
Task 3: General Project Support		TBD

<div style="display: inline-block; vertical-align: middle; text-align: center;"> United States Environmental Protection Agency Washington, DC 20460 Work Assignment </div>		Work Assignment Number 1-07								
Contract Number EP-C-16-011		Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1								
Contractor ICF INCORPORATED, L.L.C.		Title of Work Assignment/SF Site Name Lit Searches for Various DBPs								
Purpose: <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div> <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Work Plan Approval </div> <div> <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Incremental Funding </div> </div>		Specify Section and paragraph of Contract SOW See PWS								
		Period of Performance From 07/01/2017 To 06/30/2018								
Comments.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO (Max 2) <input type="checkbox"/>										
Line	DCN (Max 8)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:		LOE: 0						
11/01/2016 To 06/30/2018										
This Action				700						
Total				700						
Work Plan / Cost Estimate Approvals										
Contractor WP Dated				Cost/Fee			LOE			
Cumulative Approved				Cost/Fee			LOE			
Work Assignment Manager Name: Melanie Young <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-250-8817 FAX Number:			
Project Officer Name: Shirley Harrison <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:			
Other Agency Official Name: Shirley Harrison <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:			
Contracting Official Name: Noelle Mills <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2171 FAX Number:			

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-07**

TITLE: Literature Searches for Various Disinfection Byproducts

**WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE
(WACOR):**

Melanie Young (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
U.S. Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-250-8817 Fax #: 202- 566-1140
E-mail address: young.melanie@epa.gov

ALTERNATE WACOR: Jamie Strong (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-0056 Fax#: 202- 566-1140
E-mail address: strong.jamie@epa.gov

LOE Hours: 700

PERIOD OF PERFORMANCE: July 1, 2017 through June 30, 2018

CONTRACT PWS: 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1, 3.1.2, 3.1.2.1, 3.1.3 thru 3.1.7, 3.1.7.1, 3.1.14, 3.1.14.1, 3.1.15 thru 3.1.17, 3.8, 4.1 thru 4.3

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

BACKGROUND:

Under the Assistant Administrator for the Office of Water (OW), the Office of Science and Technology (OST) is responsible for developing sound, scientifically defensible criteria and standards under the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA) that articulate the goals and regulatory framework for restoring and maintaining the biological, chemical and physical integrity of the nation's water resources.

The Health and Ecological Criteria Division (HECD) is responsible for developing scientifically sound and defensible human health and ecological protection criteria and documentation to support the development of standards for drinking water, ambient water quality, sediment quality, bioaccumulation factors, microbiologicals, wildlife, wetlands and habitat, and sewage sludge.

Specifically, The Human Health Risk Assessment Branch (HRAB) works closely with the Office of Ground Water and Drinking Water (OGWDW) in developing human health criteria supporting the derivation of maximum contaminant level goals (MCLGs) and health advisories for contaminants in drinking water. Additionally, HECD is responsible for processing petitions for adding substances to or removing substances from the list of conventional pollutants required by Section 304(a) of the CWA.

PURPOSE: The purpose of this work assignment is to provide technical and regulatory support services to HECD for the development of a health effects support document for the following disinfection byproducts (DBPs): dibromoacetic acid, bromochloroacetic acid, bromodichloroacetic acid, dibromoacetonitrile, Mutagen X (a halogenated hydroxyfuranone), and chlorite. This work assignment directly supports HECD mission to produce and publish scientifically sound, and implementable guidance and criteria to protect human health from drinking water. Specifically, this work assignment includes tasks to perform a literature search for these chemicals.

The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. These drafts shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support any conclusions and recommendations. The contractor shall incorporate all WACOR comments (and peer review comments, where applicable) into all final deliverables, unless otherwise agreed upon by the WACOR.

QUALITY ASSURANCE:

The tasks in this work assignment require the use of existing data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data under EPA Contract EP-C-16-011 in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the March 2017 pQAPP for existing data. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment (WA)-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

PERFORMANCE WORK STATEMENT (PWS):

TASK 1: Work Plan and Monthly Progress Reports

Task 1.1 Work Plan

The contractor shall develop a detail work plan and cost estimate for each task outlined in this work assignment. The plan should contain, but not limited to, work-flowchart, elaborate schedule (task-wise), staffing plan and qualifications of proposed staff, budget for each task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than \$100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

Task 1.2 Progress Reports

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs delineated by the tasks in this WA. These reports should also indicate an estimate for the next month by task and if any lagging costs are expected. EPA realizes these estimates are just approximate values and is interested in having this information for internal budgeting purposes.

Task 1.3 Information Quality Guidelines (IQG)

The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines (www.epa.gov/quality/guidelines-ensuring-and-maximizing-quality-objectivity-utility-and-integrity-information) and shall complete the OW IQG Checklist as needed for each deliverable from this work assignment as they may be used in Agency decision-making and/or will be publicly available documents. The WACOR will provide the checklist to the contractor. The contractor shall provide a memorandum describing how the planned product(s) developed meet EPA's Information Quality Guidelines checklist. As part of that memo, the contractor shall document the quality assurance procedures it used in developing the deliverables under this work assignment. The contractor shall provide the memo at the time they deliver the Final Summary Report. As requested by the WACOR, the contractor shall have a teleconference with the WACOR to discuss the Guidelines and the contractor's role in completing the checklist.

TASK 2: Systematic Literature Search

Task 2.1 Literature Search Strategy and Evaluation Criteria Development

The contractor shall conduct systematic literature searches by first creating a literature search strategy in accordance with the ICF March 2017 pQAPP for existing data.

The literature searches will include each of the following chemicals: dibromoacetic acid, bromochloroacetic acid, bromodichloroacetic acid, dibromoacetonitrile, Mutagen X, and chlorite. For dibromoacetic acid and bromochloroacetic acid the literature searches should be date limited to 2003 to present (as an update of the 2005 EPA Drinking Water Criteria Document Brominated Acetic Acids). The searches for the other disinfection byproducts included should be date unlimited.

The Health Effects Support Documents for Microcystins and Cylindrospermopsin or Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) should serve as an example for how to structure the literature search strategy (found at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information>). The EPA 2005 Brominated Acetic Acids drinking water criteria document should serve as an additional example for how to structure the literature search strategy (found at <https://tinyurl.com/Brominated-AA-DW-Criteria-Docu>).

Specifically, the literature searches should address all literature related to health effects in animals and humans resulting from acute, subchronic, and chronic exposure durations, and from inhalation, oral, dermal, and injection exposure studies. The contractor shall also identify data specifically useful for addressing risks to children and other susceptible populations (e.g., the elderly, nursing and pregnant women). The contractor shall also include other relevant studies such as in vitro studies related to mechanism of action; studies of absorption, distribution, metabolism, and elimination; and models useful for dose- response assessment such as dosimetry models and physiologically-based pharmacokinetic (PBPK) models. The literature searches should also address all literature related to occurrence and environmental fate (the Health Advisory documents for Microcystins and Cylindrospermopsin or PFOA and PFOS should serve as an example found at <https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information> should be used to structure the search for this information).

In addition to the traditional search engines such as PubMed and Toxline, Web of Science and other databases, the literature searches shall include searches for relevant domestic and international non-periodical literature, such as books, technical reports, monographs, and conference and symposium proceedings prepared by select committees or bodies (e.g., such as those convened by the National Academy of Sciences or the World Health Organization). Additionally, include searches of secondary sources such as Registry of Toxic Effects of Chemical Substance (RTECS), National Toxicology Program (NTP), National Cancer Institute (NCI), National Institute for Environmental Health Sciences (NIEHS), National Center for Toxicological Research (NCTR), TSCA Test Submissions (TSCATS) database, etc., for unpublished or interim research reports relevant to the subject of the search. Appropriate EPA health assessment documents, guidelines, and other secondary sources such as Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles shall also be used to identify relevant literature.

The contractor shall identify the search terms, evaluation factors, and acceptance criteria. The contractor shall also compile a list of databases to be used to identify citations for studies in the areas signified above. The contractor shall submit this information to the WACOR for approval prior to doing the searches.

Once the literature search strategy has been approved by the WACOR, the contractor shall conduct the literature searches and compile the results to develop a bibliography of the relevant literature for each chemical in bibliographic software (Endnote).

Task 2.2 Conduct Literature Searches and Provide Documentation

The contractor shall notify and discuss with the WACOR results of the database screens and summarize that information in a table. Documentation of the literature searches shall contain at a minimum search strings, results (number of citations), and date of searches. The table should outline the specific databases examined, keywords employed, number of hits, and any limits of the search. In

addition, the number of relevant papers for each chemical should be identified by general category (e.g., human, animal toxicity, toxicokinetics, PBPK modeling, mechanism studies, etc). The contractor shall use the agreed upon evaluation factors and acceptance criteria to develop a list of citations that could be used to support EPA's evaluation of these contaminants under the SDWA. The contractor shall identify 1) a list of acceptable studies and 2) a list of studies that were found in the search, but were deemed insufficient. For acceptable studies, the contractor shall secure copies of the citations. This can be done through EPA's library, checking with the WACOR who may have a copy already or by other means. The contractor shall first discuss with the WACOR about any references needed. For studies deemed insufficient, the contractor shall collate abstracts only.

Task 3: Retrieval of Relevant Literature

The contractor shall retrieve all pertinent references identified in Task 2 after WACOR review. The contractor shall provide electronic copies of documents WACOR identifies as relevant. The contractor shall communicate as necessary with the WACOR regarding difficult to obtain references and foreign language documents. EPA will make a determination as to whether or not to pursue retrieval of such documents. Task 2 deliverable, i.e., copies of relevant references, shall be provided in electronic format (generally in pdf format).

Knowledge and Skills Required: The contractor shall have expertise in preparing the aforementioned materials and be knowledgeable with the various fields of discipline discussed in this work assignment. The contractor shall have practical experience in conducting literature searches and have advanced credentials in toxicology.

General Requirements of the Work Assignment and Schedule:

Due Dates: The contractor shall provide due dates that are mutually acceptable with the WACOR. The contractor shall notify the WACOR in advance, if a due date will not be met and request a revised date.

Delays: The contractor shall make every effort to ensure there are no contractor-caused delays. If a delay is inevitable, it is the contractor's responsibility to notify the WACOR at the first sign of said delay. A revised schedule will then be worked out.

Draft Documents: The contractor may be required to submit draft documents. Draft documents shall be prepared in an electronic format compatible with current Microsoft products. The WACOR will provide comments on draft submissions prior to submission of final documents.

Final Documents: The contractor shall submit final documents both electronically and in hardcopy to WACOR.

SCHEDULE AND DELIVEARABLES

Task	Task #	Milestones and Due Dates
Task 1: Work plan, monthly progress reports and quality assurance		
Workplan	1.1	Per contract requirement
Information Quality Guidelines	1.2	Discuss with WACOR within two weeks after receipt of work assignment. IQG checklists due with final deliverable (can be included with QA materials).
Task 2: Systematic Literature Search		Initial planning meeting to be held within 5 calendar days after receipt of work assignment. Subsequent meetings to be held roughly weekly, as needed.
Systematic Literature Search Strategy – DRAFT	2.1	Within 10 days of the initial planning meeting
Systematic Literature Search Strategy – FINAL	2.1	Within 5 days of receiving WACOR comments/approval
Systematic Literature Search Results-DRAFT	2.2	Within 10 days of receiving the FINAL WACOR approved Systematic Literature Search Strategy
Systematic Literature Search Results-FINAL	2.2	Within 5 days of receiving WACOR comments/approval
Task 3: Retrieval of Relevant Literature		Within 10 days of receiving the FINAL WACOR approved Literature Search Results

Travel: No travel is anticipated under this task assignment.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-07				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018			Title of Work Assignment/SF Site Name				
			Base Option Period Number 1			Literature Searches - DBPs				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1...					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 07/01/2017 To 06/30/2018					
Comments: The purpose of this amendment is to add additional LOE to support Task 3 for the development of comprehensive literature searches for the following disinfection byproducts (DBPs)										
<input type="checkbox"/> Superfund					Accounting and Appropriations Data					<input checked="" type="checkbox"/> Non-Superfund
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE:				
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:					Cost/Fee			LOE:		
Cumulative Approved:					Cost/Fee			LOE:		
Work Assignment Manager Name Melanie Young							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-250-8817			
							FAX Number:			
Project Officer Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Contracting Official Name Noelle Mills							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2171			
							FAX Number:			

PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-07, Amendment-1

TITLE: Literature Searches for Various Disinfection Byproducts

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

Melanie Young (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
U.S. Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-250-8817 Fax #: 202- 566-1140
E-mail address: young.melanie@epa.gov

ALTERNATE WACOR: Jamie Strong (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-0056 Fax#: 202- 566-1140
E-mail address: strong.jamie@epa.gov

PERIOD OF PERFORMANCE: Date of Issuance through June 30, 2018

CONTRACTOR PWS (SOW TASKS): 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1, 3.1.2, 3.1.2.1, 3.1.3 thru 3.1.7, 3.1.7.1, 3.1.14, 3.1.14.1, 3.1.15 thru 3.1.17, 3.8, 4.1 thru 4.3

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

PURPOSE OF AMENDMENT: The purpose of this amendment is add additional LOE to support Task 3 for the development of comprehensive literature searches for the following disinfection byproducts (DBPs): dibromoacetic acid, bromochloroacetic acid, bromodichloroacetic acid, dibromoacetonitrile, Mutagen X (a halogenated hydroxyfuranone), and chlorite. The contractor identified much more grey literature during the literature searches than they originally anticipated, and used more LOE than anticipated on interim/status report preparation. The additional LOE is to retrieve this literature to complete the work assignment and additional processing time to develop and complete 5 addition Endnote libraries for which the references will be provided to EPA in a structured format based on the original literature searches.

All other tasks and deliverables remain unchanged. The contractor shall submit a revised cost estimate for this amendment within 5 to 7 days.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-07				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000002				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018			Title of Work Assignment/SF Site Name				
			Base Option Period Number 5			Literature Searches - DBPs				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 07/01/2017 To 06/30/2018					
Comments: The purpose of this amendment is to correct the totals of the Amd 1 work plan approval. Amd 1 added 169 LOE and total Est Cost/Fee \$14,969. Approved WPA Totals: LOE = 613. Est cost/fee \$62,812.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE: 390				
11/01/2016 To 06/30/2018										
This Action:						0				
Total:						390				
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee		LOE:				
Cumulative Approved:				Cost/Fee		LOE:				
Work Assignment Manager Name Melanie Young						Branch/Mail Code:				
						Phone Number: 202-250-8817				
_____ (Signature) (Date)						FAX Number:				
Project Officer Name Shirley Harrison						Branch/Mail Code:				
						Phone Number: 202-566-1107				
_____ (Signature) (Date)						FAX Number:				
Other Agency Official Name						Branch/Mail Code:				
						Phone Number:				
_____ (Signature) (Date)						FAX Number:				
Contracting Official Name Sandra Stargardt-Licis						Branch/Mail Code:				
						Phone Number: 513-487-2006				
_____ (Signature) (Date)						FAX Number:				

Work Assignment Form. (WebForms v1.0)

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-08				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-16-011		Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1		Title of Work Assignment/SF Site Name Alt Rec Criteria TMS for AIM						
Contractor ICF INCORPORATED, L.L.C.				Specify Section and paragraph of Contract SOW 3.1, 3.3, 3.4, 3.6, 3.7, 3.8						
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 07/01/2017 To 06/30/2018				
Comments: Immediate Start Authorized										
<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund </div>										
Note: To report additional accounting and appropriations data use EPA Form 1900-69A.										
SFO <input type="checkbox"/> (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee			LOE:			
Cumulative Approved:				Cost/Fee			LOE:			
Work Assignment Manager Name Shamima Akhter <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1341 FAX Number:			
Project Officer Name Shirley Harrison <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:			
Other Agency Official Name Shirley Harrison <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:			
Contracting Official Name Noelle Mills <div style="display: flex; justify-content: space-between;"> <div>_____ (Signature)</div> <div>_____ (Date)</div> </div>							Branch/Mail Code: Phone Number: 513-487-2171 FAX Number:			

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT # 1-08**

TITLE: **Support for EPA's Site-Specific Alternative Recreational Criteria Technical Support Materials (TSM) for Alternative Indicators and Methods**

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

Shamima Akhter
Health and Ecological Criteria Division (Mail Code 4304T)
Office of Water, Office of Science and Technology
1200 Pennsylvania Ave, N.W.
Washington, DC 20460
Phone (202) 566-1341
E-mail: akhter.shamima@epa.gov

ALTERNATE WACOR: John Ravenscroft
 Health and Ecological Criteria Division (Mail Code 4304T)
 Office of Water, Office of Science and Technology
 1200 Pennsylvania Ave, N.W.
 Washington, DC 20460
 Phone (202) 566-1101
 E-mail: ravenscroft.john@epa.gov

PERIOD OF PERFORMANCE: Issuance through June 30, 2018

CONTRACT PWS: 3.1, 3.3, 3.4, 3.6, 3.7, 3.8

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

BACKGROUND:

An important goal of the Clean Water Act (CWA) is to protect and restore waters for swimming. A key component in the CWA framework for protecting and restoring waters for swimming in State adoption of Water Quality Standards (WQS) to protect swimmers from illnesses associated with "microbes" in the water. One of the EPA's key roles is to recommend recreational water quality criteria (RWQC), under section 304(a) of the CWA, for adoption by the States. These EPA recommended criteria have been historically based on fecal matter in the water; in the 1960's the Federal government recommended certain levels of fecal coliform as the recreational criteria, and in 1986 EPA recommended certain enterococci and *E. coli* as its new recreational criteria.

In November 2012, EPA published updated national recommended RWQC, which serve as guidelines to states to help them determine when water is safe enough for people to swim without getting sick from fecal contamination (for example, skin rash, stomach ache, fever). The 2012 RWQC provide two sets of numeric concentration thresholds based on the use of two

bacterial indicators, *E. coli* and enterococci. Illness rates upon which these recommendations are based include the use of the National Epidemiological and Environmental Assessment of Recreational Water (NEEAR) study and epidemiological studies used to support the 1986 Ambient Water Quality Criteria. At that time, EPA committed to providing technical documents to facilitate state development of site-specific alternative water quality criteria to protect swimmers from exposure to water that contains organisms that indicate the presence of fecal contamination. These technical support documents will help states develop alternative recreational criteria that take into account site-specific factors and incorporate the new and evolving science of microbial measurement.

One of the technical support documents ‘Site-Specific Alternative Criteria Technical Support Materials for Alternative Indicators and Methods’ where EPA anticipates that scientific advancements will provide new technologies for quantifying indicators of fecal contamination. These new technologies also might provide improvements over existing methods with regards to rapidity, sensitivity, specificity, and method performance for site-specific applications. As new or alternative indicator and enumeration method combinations mature, states, territories, and authorized Indian tribes might want to consider using these methods to develop site-specific water quality criteria (WQC). Information demonstrating that site-specific alternative criteria are scientifically defensible and protective of the recreational use is necessary to support new or revised water quality standards (WQS).

In December 2014, EPA has published online the first of three technical support documents and an overview document that provide information for states on flexible approaches for developing site-specific recreational water quality criteria that reflect the latest science. The document Overview of Technical Support Materials: A Guide to the Site-Specific Alternative Criteria TSM Documents is an overarching guide designed to help water quality managers evaluate their site information and choose the best technical approach for developing site-specific recreational water quality criteria. The first technical support document, Site-Specific Alternative Criteria Technical Support Materials for Alternative Indicators and Methods, describes how to evaluate and compare alternative methods for measuring microbes in water using an existing EPA-approved method. This document provides support materials for developing site-specific alternative WQC using new methods for fecal indicator detection or enumeration that EPA has not validated and issued. This document is part of a set of Technical Support Materials (TSMs) discussed in Section 6 of the 2012 Recreational Water Quality Criteria (EPA 820-F-12-058). This document applies to cases where states wish to use an alternative indicator/method at a site because it has certain advantages over the EPA-recommended methods. This document outlines the scientific information needed before an alternative indicator/method can replace the use of a recommended or approved method on a site-specific basis. States may replace the original method at sites where they have demonstrated that an alternative indicator/method has a consistent and predictable relationship with the original method. A state WQS using a different indicator organism or analytical method must be scientifically defensible and protective of the primary contact recreational use. EPA uses WQS for multiple Clean Water Act (CWA) purposes, so in the WQS submission states should discuss the application of the new WQS in the context of specific CWA purposes.

EPA anticipates a need to develop a spread sheet tool to calculate R-squared and Index of Agreement from Appendix E (EPA-820-R-14-011) where states can plug-in the data set.

QUALITY ASSURANCE:

The tasks (2 and 3) in this work assignment require the use of existing data to create a calculation work sheet. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The contractor shall comply with the EPA approved pQAPP. The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the approved pQAPP. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment (WA)-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

PERFORMANCE WORK STATEMENT (PWS): The scope of work in this assignment will fall under the following task areas:

Task 1: Work plan and monthly progress reports

Task 1.1 Work Plan

The contractor shall develop a detail work plan and cost estimate for each task outlined in this work assignment. The plan should contain, but not limited to, work-flowchart, elaborate schedule (task-wise), staffing plan and qualifications of proposed staff, budget for each task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than \$100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs delineated by the tasks in this WA. These reports should also indicate an estimate for the next month by task and if any lagging costs are expected. EPA realizes these estimates are

just approximate values and is interested in having this information for internal budgeting purposes.

Task 1.2 Information Quality Guidelines

The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines and shall complete the Checklist for Influential Information as needed for each deliverable from this work assignment as they may be used in Agency decision-making and/or will be publicly available documents. The WACOR will provide the checklist to the contractor. The contractor shall provide a memorandum describing how the planned product(s) developed meet EPA's Information Quality Guidelines checklist. As part of that memo, the contractor shall document the quality assurance procedures it used in developing the deliverables under this Work Assignment. The contractor shall provide the memo at the time it delivers the Final Summary Report. As requested by the WACOR, the contractor shall have a teleconference with the WACOR to discuss the Guidelines and the contractor's role in completing the checklist.

Task 2: Spreadsheet Tool for Calculating Index of Agreement and R-squared

The contractor shall develop an Excel Spreadsheet based on Appendix E (Site Specific Alternative Recreational Criteria Technical Support Material for Alternative Indicators and Methods for calculating Index of Agreement and R-squared (EPA-820-R-14-011)). The contractor shall include: 1) user notes – tab in spreadsheet on how to use it; and 2) Clear format – so user knows which cells to populate. The contractor shall provide clear and consistent format of the spreadsheet. The contractor shall provide the WACOR the draft spreadsheet tool for EPA internal revision. Upon receiving the WACOR comments, the contractor shall incorporate all EPA comments to the draft document. The contractor shall coordinate all aspects of the spreadsheet tool with the WACOR.

Task 3: Spreadsheet Demonstration

The contractor shall provide user support in coordination with the WACOR. The contractor shall provide a one-hour training to teach users how to use the spreadsheet. The contractor shall provide a draft presentation of the training to the WACOR for EPA review. The contractor shall address all the WACOR comments. After addressing all EPA comments, the contractor shall assist the WACOR with the webinar training for the public.

Task 4 - General Project Support

The contractor shall, based on technical direction given by the WACOR, provide support in preparing interim project updates and other materials for internal and external audiences. Updates and other support materials may include, but are not limited to, short briefing documents, PowerPoint presentations, conference posters, and internal EPA communication package. The contractors may also be requested to participate in and/or conduct briefings. A weekly update call with the WACOR will be required for this work assignment, as needed. Some meetings may require contractor support and/or attendance for note-taking, presentations, and/or meeting preparation materials.

TRAVEL: Local travel is anticipated under this work assignment. No contractor travel outside of the Washington, D.C. metro area is required. Travel may be needed as deemed necessary by the WACOR.

KNOWLEDGE AND SKILLS REQUIRED:

The contractor shall have expertise in preparing the aforementioned materials and be knowledgeable with the various fields of discipline discussed in this work assignment. The contractor shall have practical experience in statistical methods and have analysis and have advanced credentials in environmental microbiology. The contractor shall be familiar with the use of fecal indicator organisms, microbiological analytical methods (including molecular techniques) water monitoring, applications of epidemiological data, determination of human exposure to environmental contaminant sources, and gastrointestinal disease endpoints, and other factors associated with needs in recreational water quality and CWA 304(a) criteria development

General Requirements of the Work Assignment and Schedule:

Due Dates: The contractor shall provide due dates that are mutually acceptable with the WACOR. The contractor shall notify the WACOR in advance, if a due date will not be met and request a revised date.

Delays: The contractor shall make every effort to ensure there are no contractor-caused delays. If a delay is inevitable, it is the contractor's responsibility to notify the WACOR at the first sign of said delay. A revised schedule will then be worked out.

Draft Documents: The contractor may be required to submit draft documents. Draft documents shall be prepared in an electronic format compatible with current Microsoft products. The WACOR will provide comments on draft submissions prior to submission of final documents.

Final Documents: The contractor shall submit final documents both electronically and in hardcopy to WACOR.

MILESTONES/DELIVERABLES TABLE:

Task	Milestone	Date due
1	Work plan, monthly progress reports and quality assurance	
1.1	Work Plan	Per contract requirements
1.2	Information Quality Guidelines	Discuss with WACOR within 20 calendar days after receipt of work assignment. IQG checklists due with final deliverable (can be included with QA materials).
2	Spreadsheet Tool for Calculating Index of Agreement and R-squared	Due as requested by the WACOR via written technical direction
3	Spreadsheet Demonstration	Due as requested by the WACOR via written technical direction
4	General Project Support	Due as requested by the WACOR via written technical direction

EPAUnited States Environmental Protection Agency
Washington, DC 20460**Work Assignment**

Work Assignment Number

1-08

☐ Other☒ Amendment Number:

000001

Contract Number

EP-C-16-011

Contract Period 11/01/2016 To 06/30/2018

Base

Option Period Number 1

Title of Work Assignment/SF Site Name

Support for EPA Site-Specific

Contractor

ICF Incorporated, L.L.C.

Specify Section and paragraph of Contract SOW

3.1, 3.3, 3.4, 3.6, 3.7, 3.8

Purpose:



Work Assignment



Work Assignment Close-Out



Work Assignment Amendment



Incremental Funding



Work Plan Approval

Period of Performance

From 07/01/2017 To 06/30/2018

Comments

The purpose of this work assignment amendment is to provide additional LOE to support efforts related to Task 2, Subtask 2.1 to enhance the Spreadsheet Tool for Calculating Index of Agreement and Required.



Superfund

Accounting and Appropriations Data



Non-Superfund

SFO

(Max 2)



Note: To report additional accounting and appropriations data use EPA Form 1900-69A.

Line	OCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:

11/01/2016 To 06/30/2018

Cost/Fee:

LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated:

Cost/Fee

LOE:

Cumulative Approved:

Cost/Fee

LOE

Work Assignment Manager Name Shamima Akhter

(Signature)

(Date)

Branch/Mail Code:

Phone Number: 202-566-1341

FAX Number:

Project Officer Name Shirley Harrison

(Signature)

(Date)

Branch/Mail Code:

Phone Number: 202-566-1107

FAX Number:

Other Agency Official Name Shirley Harrison

(Signature)

(Date)

Branch/Mail Code:

Phone Number: 202-566-1107

FAX Number:

Contracting Official Name Noelle Mills

(Signature)

(Date)

Branch/Mail Code:

Phone Number: 513-487-2171

FAX Number:

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT 1-08 Amendment 1**

TITLE: **Support for EPA's Site-Specific Alternative Recreational Criteria Technical Support Materials (TSM) for Alternative Indicators and Methods**

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

Shamima Akhter
Health and Ecological Criteria Division (Mail Code 4304T)
Office of Water, Office of Science and Technology
1200 Pennsylvania Ave, N.W.
Washington, DC 20460
Phone (202) 566-1341
E-mail: akhter.shamima@epa.gov

ALTERNATE WACOR: John Ravenscroft
 Health and Ecological Criteria Division (Mail Code 4304T)
 Office of Water, Office of Science and Technology
 1200 Pennsylvania Ave, N.W.
 Washington, DC 20460
 Phone (202) 566-1101
 E-mail: ravenscroft.john@epa.gov

PERIOD OF PERFORMANCE: Issuance through June 30, 2018

CONTRACT PWS: 3.1, 3.3, 3.4, 3.6, 3.7, 3.8

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

Purpose of the Amendment: The purpose of this work assignment amendment is to provide additional LOE to support efforts related to Task 2, Subtask 2.1 to enhance the Spreadsheet Tool for Calculating Index of Agreement and R-squared. All tasks in the original work assignment remain the same, no change. The contractor shall submit a revised cost estimate within 5 days for this amendment.

Task 2: Spreadsheet Tool for Calculating Index of Agreement and R-squared

Subtask 2.1:

- The contractor shall enhance the tool to allow users the option of either (i) saving an analysis in a new worksheet as part of the existing workbook or (ii) saving the analysis as a separate new workbook. With the former option, users will be able to save multiple analyses within the same workbook. If an analysis is saved within the existing workbook, the new worksheet should contain all inputs, outputs, figures, and data documentation related to that analysis. This additional functionality will require modification of the

underlying Visual Basic macros to generate new interactive screens and the modification of existing macros to facilitate the generation of a new worksheet containing all the required analysis elements copied from the tool operation tab.

- In addition, the contractor shall enhance the tool to allow users to optionally specify an EPA-approved indicator (X-axis indicator) threshold that will appear on the figure as a straight dashed line intercepting the X-axis at the specified threshold. If no threshold is specified, no line will appear. This additional functionality will require modification of the underlying Visual macros and sheet-based commands to achieve the required objective.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-09	
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:	
Contract Number EP-C-16-011		Contract Period 11/01/2016 To 06/30/2018		Title of Work Assignment/SF Site Name			
		Base Option Period Number 1		Lit search Saxitoxin/Anatoxin-			
Contractor ICF INCORPORATED, L.L.C.				Specify Section and paragraph of Contract SOW see PWS			
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval				Period of Performance From 07/01/2017 To 06/30/2018			
Comments: Immediate Start Authorized							
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund							
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations date use EPA Form 1900-69A.							
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars) (Cents) Site/Project (Max 8) Cost Org/Code
1							
2							
3							
4							
5							
Authorized Work Assignment Ceiling							
Contract Period: 11/01/2016 To 06/30/2018		Cost/Fee:		LOE: 0			
This Action:				645			
Total:				645			
Work Plan / Cost Estimate Approvals							
Contractor WP Dated:		Cost/Fee		LOE:			
Cumulative Approved:		Cost/Fee		LOE:			
Work Assignment Manager Name Lesley Vazquez-Coriano						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number: 202-566-1125	
						FAX Number:	
Project Officer Name Shirley Harrison						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number: 202-566-1107	
						FAX Number:	
Other Agency Official Name Amber Muniz						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number: 513-487-2126	
						FAX Number:	
Contracting Official Name Noelle Mills						Branch/Mail Code:	
_____ (Signature) (Date)						Phone Number: 513-487-2171	
						FAX Number:	

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-09**

TITLE: Literature Searches for Saxitoxin and Anatoxin-a

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR) :

Lesley D'Anglada (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-1125 FAX #: 202- 566-1140
E-mail- DAnglada.Lesley@epa.gov

ALTERNATE WACOR: Jamie Strong (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-0056 FAX #: 202- 566-1140
E-mail- strong.jamie@epa.gov

LOE HOURS: 645 hours

PERIOD OF PERFORMANCE: July1, 2017 through June 30, 2018

CONTRACTOR PWS (SOW TASKS): 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1, 3.1.2, 3.1.2.1, 3.1.3 thru 3.1.7, 3.1.7.1, 3.1.14, 3.1.14.1, 3.1.15 thru 3.1.17, 3.8, 4.1 thru 4.3

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

BACKGROUND:

Under the Assistant Administrator for the Office of Water (OW), the Office of Science and Technology (OST) is responsible for developing sound, scientifically defensible criteria and standards under the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA) that articulate the goals and regulatory framework for restoring and maintaining the biological, chemical and physical integrity of the nation's water resources.

The Health and Ecological Criteria Division (HECD) is responsible for developing scientifically sound and defensible human health and ecological protection criteria and documentation to support the development of standards for drinking water, ambient water quality, sediment quality, bioaccumulation factors, microbiologicals, wildlife, wetlands and habitat, and sewage

sludge. Specifically, the Health Risk Assessment Branch (HRAB) works closely with the Office of Ground Water and Drinking Water (OGWDW) in developing human health criteria supporting the derivation of maximum contaminant level goals (MCLGs) and health advisories for contaminants in drinking water. Additionally, HECD is responsible for processing petitions for adding substances to or removing substances from the list of conventional pollutants required by Section 304(a) of the CWA.

PURPOSE:

The purpose of this work assignment is to provide technical and regulatory support services to HECD for the development of a health effects support document (HESD) for saxitoxin and update of the existing HESD for anatoxin-a. This work assignment directly supports HECD mission to produce and publish scientifically sound, and implementable guidance and criteria to protect human health from drinking water. Specifically, this work assignment includes tasks to perform a literature search and systematic review of the literature for these chemicals.

The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. These drafts shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support any conclusions and recommendations. The contractor shall incorporate all WACOR comments (and peer review comments, where applicable) into all final deliverables, unless otherwise agreed upon by the WACOR.

QUALITY ASSURANCE:

The tasks in this work assignment require the use of existing data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data under EPA Contract EP-C-16-011 in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the March 2017 pQAPP for existing data. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment (WA)-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

PERFORMANCE WORK STATEMENT (PWS):

TASK 1: Work Plan and Monthly Progress Reports

Task 1.1 Work Plan

The contractor shall develop a detail work plan and cost estimate for each task outlined in this work assignment. The plan should contain, but not limited to, work-flowchart, elaborate schedule (task-wise), staffing plan and qualifications of proposed staff, budget for each task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than \$100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

Task 1.2 Monthly Progress Reports

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs delineated by the tasks in this WA. These reports should also indicate an estimate for the next month by task and if any lagging costs are expected. EPA realizes these estimates are just approximate values and is interested in having this information for internal budgeting purposes.

Task 1.3 Information Quality Guidelines

The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines (<http://www.epa.gov/quality/informationguidelines/>) and shall complete the Checklist for Influential Information, as needed, for each deliverable from this work assignment. The WACOR will provide this checklist to the contractor. The contractor shall have a teleconference with the WACOR before the initiation of Task 2 to discuss the Information Quality Guidelines and the contractor's role in completing the checklist. At the end of the work assignment, the contractor shall provide a memorandum describing how the planned product(s) developed for this work assignment meet with EPA's Checklist for Influential Information and documenting the quality assurance procedures that were used in developing the deliverables under this PWS.

TASK 2: Systematic Literature Search

Task 2.1 Literature Search Strategy and Evaluation Criteria Development

The contractor shall conduct systematic literature searches following the March 2017-pQAPP for existing data.

The literature searches will include each of the following chemicals: saxitoxin and anatoxin-a. The Health Effects Support Documents for Microcystins, Cylindrospermopsin, and Anatoxin-a or Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) should serve as an example for how to structure the literature search strategy (found at

<https://www.epa.gov/dwstandardsregulations/drinking-water-contaminant-human-health-effects-information>). The search for saxitoxin should not be limited by starting date, and the search for anatoxin-a should begin with literature from 2015. Specifically, the literature searches should address all literature related to production of saxitoxin and anatoxin-a by both freshwater and marine organisms. The search should address chemical and physical properties; synthesis; factors affecting growth and environmental fate; occurrence in source and finished drinking water; and occurrence in soil, edible plants, fish, shellfish, and dietary supplements. The search should also address absorption, distribution, metabolism and excretion from oral, inhalation and any other exposure routes, including the toxin's distribution in the liver and any dosimetry models and physiologically-based pharmacokinetic (PBPK) models that are available. The search should also include epidemiological studies; studies on health effects in animals and humans that address acute, short-term, subchronic, and chronic toxicity; and reproductive and developmental toxicity. All routes of exposure and methods of delivery (i.p. injection, gavage, etc.) should be included in the search for toxicity studies. Carcinogenicity should also be addressed by accessing human epidemiological studies and animal studies from all routes of exposure including *in vitro* tumor promotion studies. Additionally, any literature on mutagenicity; genotoxicity; immunotoxicity; hematological effects; mechanistic and physiological studies; and structure activity relationships should be obtained. The contractor shall also identify data specifically useful for addressing risks to children and other susceptible populations (e.g., the elderly, nursing and pregnant women).

In addition to the traditional search engines such as PubMed and Toxline, Web of Science and other databases, the literature searches shall include searches for relevant domestic and international non-periodical literature, such as books, technical reports, monographs, and conference and symposium proceedings prepared by select committees or bodies (e.g., such as those convened by the National Academy of Sciences (NAS) or the World Health Organization (WHO)). Additionally, include searches of secondary sources such as Registry of Toxic Effects of Chemical Substance (RTECS), National Toxicology Program (NTP), National Cancer Institute (NCI), National Institute for Environmental Health Sciences (NIEHS), National Center for Toxicological Research (NCTR), TSCA Test Submissions (TSCATS) database, etc., for unpublished or interim research reports relevant to the subject of the search. Appropriate EPA health assessment documents, guidelines, and other secondary sources such as Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles shall also be used to identify relevant literature.

The contractor shall identify the search terms, evaluation factors, and acceptance criteria. The contractor shall also compile a list of databases to be used to identify citations for studies in the areas signified above. The contractor shall submit this information to the WACOR for approval prior to doing the searches.

Once the literature search strategy has been approved by the WACOR, the contractor shall conduct the literature searches and compile the results to develop a bibliography of the relevant literature for each chemical in bibliographic software (Endnote).

Task 2.2 Conduct Literature Searches and Provide Documentation

The contractor shall notify and discuss with the WACOR results of the database screens and summarize that information in a table. Documentation of the literature searches shall contain at a minimum search strings, results (number of citations), and date of searches. The table should outline the specific databases examined, keywords employed, number of hits, and any limits of the search. In addition, the number of relevant papers for each chemical should be identified by general category (e.g., human, animal toxicity, toxicokinetics, PBPK modeling, mechanistic studies, etc). The contractor shall use the agreed upon evaluation factors and acceptance criteria to develop a list of citations that could be used to support EPA's evaluation of these contaminants under the SDWA. The contractor shall identify 1) a list of acceptable studies and 2) a list of studies that were found in the search, but were deemed insufficient. For acceptable studies, the contractor shall secure copies of the citations. This can be done through EPA's library, checking with the WACOR who may have a copy already or by other means. The contractor shall first discuss with the WACOR about any references needed. For studies deemed insufficient, the contractor shall collate abstracts only.

Task 3: Retrieval of Relevant Literature

The contractor shall retrieve all pertinent references identified in Task 2 after WACOR review. The contractor shall provide electronic copies of documents WACOR identifies as relevant. The contractor shall communicate as necessary with the WACOR regarding difficult to obtain references and foreign language documents. EPA will make a determination as to whether or not to pursue retrieval of such documents. The Task 2 deliverable, i.e., copies of relevant references, shall be provided in electronic format (generally in pdf format).

Knowledge and Skills Required: The contractor shall have expertise in preparing the aforementioned materials and be knowledgeable with the various fields of discipline discussed in this work assignment. The contractor shall have practical experience in conducting literature searches and have advanced credentials in toxicology.

General Requirements of the Work Assignment and Schedule:

Due Dates: The contractor shall provide due dates that are mutually acceptable with the WACOR. The contractor shall notify the WACOR in advance, if a due date will not be met and request a revised date.

Delays: The contractor shall make every effort to ensure there are no contractor-caused delays. If a delay is inevitable, it is the contractor's responsibility to notify the WACOR at the first sign of said delay. A revised schedule will then be worked out.

Draft Documents: The contractor may be required to submit draft documents. Draft documents shall be prepared in an electronic format compatible with current Microsoft products. The WACOR will provide comments on draft submissions prior to submission of final documents.

Final Documents: The contractor shall submit final documents both electronically and in hardcopy to WACOR.

SCHEDULE AND DELIVEARABLES

Task	Task #	Milestones and Due Dates
Task 1: Work plan, monthly progress reports and quality assurance		
Workplan	1.1	Per contract requirements
Information Quality Guidelines	1.2	Discuss with WACOR within two weeks after receipt of work assignment. IQG checklists due with final deliverable (can be included with QA materials).
Task 2: Systematic Literature Search		Initial planning meeting to be held within 5 calendar days after receipt of work assignment. Subsequent meetings to be held roughly weekly, as needed.
Systematic Literature Search Strategy – DRAFT	2.1	Within 10 days of the initial planning meeting
Systematic Literature Search Strategy – FINAL	2.1	Within 5 days of receiving WACOR comments/approval
Systematic Literature Search Results-DRAFT	2.2	Within 10 days of receiving the FINAL WACOR approved Systematic Literature Search Strategy
Systematic Literature Search Results-FINAL	2.2	Within 5 days of receiving WACOR comments/approval
Task 3: Retrieval of Relevant Literature		Within 10 days of receiving the FINAL WACOR approved Literature Search Results

Travel: No travel is anticipated under this task assignment

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-09				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1			Title of Work Assignment/SF Site Name Lit Search-Saxitoxin/Anatoxin-				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW see PWS					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 07/01/2017 To 06/30/2018				
Comments: The purpose of this amendment is add additional LOE to support Tasks 2 and 3 for the development of comprehensive literature searches for saxitoxin and anatoxin-a.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:			LOE:					
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:					Cost/Fee			LOE:		
Cumulative Approved:					Cost/Fee			LOE:		
Work Assignment Manager Name Lesley Vazquez-Coriano							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1125			
							FAX Number:			
Project Officer Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number:			
							FAX Number:			
Contracting Official Name Sandra Stargardt-Licis							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2006			
							FAX Number:			

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-09, Amendment-1**

TITLE: Literature Searches for Saxitoxin and Anatoxin-a

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

Lesley D'Anglada (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-1125 FAX #: 202- 566-1140
E-mail- DAnglada.Lesley@epa.gov

ALTERNATE WACOR: Jamie Strong (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-0056 FAX #: 202- 566-1140
E-mail- strong.jamie@epa.gov

PERIOD OF PERFORMANCE: July1, 2017 through June 30, 2018

CONTRACTOR PWS (SOW TASKS): 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1, 3.1.2, 3.1.2.1, 3.1.3 thru 3.1.7, 3.1.7.1, 3.1.14, 3.1.14.1, 3.1.15 thru 3.1.17, 3.8, 4.1 thru 4.3

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

PURPOSE OF AMENDMENT: The purpose of this amendment is add additional LOE to support Tasks 2 and 3 for the development of comprehensive literature searches for saxitoxin and anatoxin-a. The contractor identified much more grey literature during the literature searches for saxitoxin than they originally anticipated, and will need additional LOE than anticipated to retrieve these references to complete the work assignment.

All other tasks and deliverables remain unchanged. The contractor shall submit a revised cost estimate for this amendment within 5 to 7 days.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-09				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000002				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1			Title of Work Assignment/SF Site Name Saxitoxin and Anatoxin-a				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW see PWS					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 07/01/2017 To 06/30/2018				
Comments: The purpose of this amendment is to add additional LOE to support Tasks 2 and 3 for the development of comprehensive literature searches for saxitoxin and anatoxin-a.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE:				
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:						Cost/Fee		LOE:		
Cumulative Approved:						Cost/Fee		LOE:		
Work Assignment Manager Name Lesley Vazquez-Coriano							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1125			
							FAX Number:			
Project Officer Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Contracting Official Name Sandra Stargardt-Licis							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2006			
							FAX Number:			

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-09, Amendment-2**

TITLE: Literature Searches for Saxitoxin and Anatoxin-a

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

Lesley D'Anglada (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-1125 FAX #: 202- 566-1140
E-mail- DAnglada.Lesley@epa.gov

ALTERNATE WACOR: Jamie Strong (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-0056 FAX #: 202- 566-1140
E-mail- strong.jamie@epa.gov

PERIOD OF PERFORMANCE: Date of Issuance through June 30, 2018

CONTRACTOR PWS (SOW TASKS): 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1.1, 3.1.2, 3.1.2.1, 3.1.3 thru 3.1.7, 3.1.7.1, 3.1.14, 3.1.14.1, 3.1.15 thru 3.1.17, 3.8, 4.1 thru 4.3

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

PURPOSE OF AMENDMENT: The purpose of this amendment is add additional LOE to support Tasks 2 and 3 for the development of comprehensive literature searches for saxitoxin and anatoxin-a. The contractor identified much more grey literature during the literature searches for saxitoxin than they originally anticipated, and will need additional LOE to retrieve these references to complete the work assignment. All other tasks and deliverables remain unchanged. The contractor shall submit a revised cost estimate for this amendment within 5 to 7 days.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-10				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-16-011		Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1		Title of Work Assignment/SF Site Name Computational Modeling Support						
Contractor ICF INCORPORATED, L.L.C.				Specify Section and paragraph of Contract SOW 3.3, 3.6						
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 07/01/2017 To 06/30/2018				
Comments:										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:		LOE:						
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee		LOE:				
Cumulative Approved:				Cost/Fee		LOE:				
Work Assignment Manager Name Carol Peterson <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> (Signature) (Date) </div>						Branch/Mail Code:				
						Phone Number: 202-566-1304				
						FAX Number:				
Project Officer Name Shirley Harrison <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> (Signature) (Date) </div>						Branch/Mail Code:				
						Phone Number: 202-566-1107				
						FAX Number:				
Other Agency Official Name Amber Muniz <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> (Signature) (Date) </div>						Branch/Mail Code:				
						Phone Number: 513-487-2126				
						FAX Number:				
Contracting Official Name Noelle Mills <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> (Signature) (Date) </div>						Branch/Mail Code:				
						Phone Number: 513-487-2171				
						FAX Number:				

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-10**

TITLE: Computational Modeling Support to Examine Mercury Loads to US Waterbodies via Atmospheric Deposition

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR) :

Carol Peterson (Mail Code 4503T)
Office of Water, Office of Wetlands, Oceans and Watersheds (OWOW)
Assessment and Watershed Protection Division, Watershed Branch
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone#: 202-566-1304
E-mail- Peterson.Carol@epa.gov

PERIOD OF PERFORMANCE: July1, 2017 through June 30, 2018

CONTRACTOR PWS: 3.1,3.3,3.5 and 3.6

BACKGROUND:

Mercury contamination of waterbodies presents a near ubiquitous problem across the continental US, resulting in numerous violations of State water quality standards. Under Section 303(d) of the Clean Water Act (CWA), States are required to list these waters as impaired and prepare TMDLs (Total Daily Maximum Loads) that in part identify the sources responsible. TMDL Implementation Plans can then follow, which outline steps to be taken to reduce the amounts of pollutants entering the affected waterbodies to acceptable levels.

For mercury, the dominant source in most waterbodies is atmospheric deposition. In 2008, ICF prepared a report that outlined modeling they conducted for EPA that allowed key emission sources in each state to be followed, or "tagged", along with emissions from Canada, Mexico and from the global background in order to facilitate State's being able to assign source attribution allocations in their TMDL and related programs. (See: Model-Based Analysis and Tracking of Airborne Mercury Emissions to Assist in Watershed Planning, August 5, 2008, Prepared for US EPA Office of Water by ICF International, San Rafael, CA). That modeling work was used by numerous States in preparing an initial round of TMDLs and related planning analyses, but is now outdated and in need of revision. The purpose of this work assignment is to update that earlier work with current state of the art modeling tools and inputs, such as meteorological data and emission inventories.

QUALITY ASSURANCE: The tasks (Tasks 2 - 5) in this work assignment require the use of secondary data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the approved ICF March 2017 Programmatic QAPP (pQAPP) to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers secondary data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the approved pQAPP. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a WA-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the QA/QC procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

TASK 1: Work Plan and monthly progress reports (MPR)

Task Area 1.1. Work Plan

The contractor shall develop a work plan to address all tasks in this work assignment. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. If a subcontractor(s) is proposed and subcontractors are outside the metropolitan DC area, the contractor shall include information on plans to manage work and contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than \$100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

Task Area 1.2. Monthly Progress Reports

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoiced LOE and costs delineated by the tasks in this WA. The contractor shall provide the WACOR with regular updates detailing progress.

Task Area 1.3. Information Quality Guidelines (IQG)

The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines (<http://www.epa.gov/quality/informationguidelines/>) and shall complete the Checklist for Influential Information, as needed, for each deliverable from this work assignment. The WACOR will provide this checklist to the contractor. The contractor shall have a teleconference with the WACOR before the initiation of Task 2 to discuss the Information Quality Guidelines and the contractor's role in completing the checklist. At the end of the work assignment, the contractor shall provide a memorandum describing how the planned product(s) developed for this work assignment meet with EPA's Checklist for Influential Information and documenting the quality assurance procedures that were used in developing the deliverables under this PWS.

TASK 2: Inventory Preparation

In consultation with the WACOR, the contractor shall identify and obtain the most recently available nationwide inventories for mercury and criteria pollutants necessary to address the atmospheric chemistry of mercury. Similar inventories for Canada and Mexico shall also be obtained. For US emission sources, the contractor shall parse the mercury inventory by State and identify the top 20 emitters of total mercury and divalent gaseous mercury, compiling the results into an Excel Spreadsheet. EPA will then work with State and EPA Regional partners to identify which individual sources will be "tagged" in the subsequent modeling described below in Task 4.

Deliverable: Due date: 2 months after completion of Task 1

TASK 3: Meteorological Data Preparation

The contractor shall identify and obtain meteorological data to facilitate deposition modeling on a nationwide 12km by 12km scale that would correspond to the same year as the emission inventory data outlined in Task 2 above. These data will be configured for input into the latest version of CMAQ for modeling described in Task 4.

Deliverable: Due date: 2 months after completion of Task 1

TASK 4: Deposition Modeling

Task 4a: The contractor shall identify and obtain model runs from GEOS-Chem from EPA's Office of Research and Development (ORD) or a similar source that will provide global background mercury contributions to the US modeling domain, as described below.

Deliverable: Due date: 2 months after completion of Task 1

Task 4b: The contractor shall obtain the latest version of the CMAQ model from EPA's Office of Research and Development (ORD). The model shall be initialized with the emission inventories and meteorological data described in Tasks 2 and 3 above. CMAQ is to be run at a 12km by 12km grid system spacing covering the continental US, extending an appropriate distance into Canada and Mexico. Boundary conditions shall be established with outputs from the GEOS-Chem model, as described in Task 4a. The contractor shall divide the US mercury emission sources into a series of approximately 300 tags of individual and grouped sources, identified for the contractor by the WACOR, which will allow post-processing to determine total contributions to atmospheric deposition by all sources within any given state in the continental US. Emissions from Canada, Mexico, and from global background sources shall also be tagged.

Deliverable: Due date: 6 months after completion of Tasks 2 and 3 (WACOR will provide the contractor with the list of which state-specific sources will be individually tagged in the modeling runs within 2 months after the contractor completes Task 2)

TASK 5: Report and Final Data Preparation

The contractor shall compile a report documenting the methodologies followed, data bases used, quality assurance steps taken, and model evaluation (comparing results to appropriate monitoring data). The report shall also contain, at a minimum, a map of each state showing the deposition mapping results and identifying the grid cell in each state where that state's sources contributed the greatest percentage to deposition in that state. An attribution pie chart assigning deposition amounts for that grid cell shall be included. The contractor shall also transfer to the WACOR files containing the raw, tag-specific modeling outputs.

Deliverable: Due date: Initial draft due within 2 months after completion of Task 4b; WACOR will provide comments on this draft within 1 month after receipt and the contractor shall prepare a final report within 1 month of receiving those comments; Transfer of raw data outputs are due to the WACOR within 1 month after completion of Task 4b

Deliverables and Schedules

<u>Tasks</u>	<u>Milestones</u>	<u>Due Date</u>
Task 1	Workplan, Monthly Progress Reports and Quality Assurance	per contract requirement
	Information Quality Guidelines	Discuss with WACOR within 20 calendar days after receipt of workplan approval. IQG checklist due with final deliverable (can be included with QA materials)
Task 2	Inventory Preparation	Due date: 2 months after completion of Task 1
Task 3	Meteorological Data Preparation	Due date: 2 months after completion of Task 1
Task 4	Deposition Modeling	
Task 4a	Identify and Obtain Model runs (GEOS-Chem) from ORD or similar source	Due date: 2 months after completion of Task 1
Task 4b	Obtain latest version of the CMAQ Model from ORD	Due date: 6 months after completion of Tasks 2 and 3 (WACOR will provide the contractor with the list of which state-specific sources will be individually tagged in the modeling runs within 2 months after the contractor completes Task 2)
Task 5	Report and Final Data Preparation	Due date: Initial draft due within 2 months after completion of Task 4b; WACOR will provide comments on this draft within 1 month after receipt and the contractor shall prepare a final report within 1 month of receiving those comments; Transfer of raw data outputs are due to the WACOR within 1 month after completion of Task 4b

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-11				
						<input type="checkbox"/> Other <input type="checkbox"/> Amendment Number:				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1			Title of Work Assignment/SF Site Name Econ&Lit Steam Electric				
Contractor ICF INCORPORATED, L.L.C.					Specify Section and paragraph of Contract SOW 3.4 and 3.5 Rulemaking support					
Purpose: <input checked="" type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 08/04/2017 To 06/30/2018				
Comments: Immediate Start authorized on all tasks										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE: 0				
11/01/2016 To 06/30/2018										
This Action:						1,000				
Total:						1,000				
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee		LOE:				
Cumulative Approved:				Cost/Fee		LOE:				
Work Assignment Manager Name James Covington						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-566-1034				
						FAX Number:				
Project Officer Name Shirley Harrison						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-566-1107				
						FAX Number:				
Other Agency Official Name Shirley Harrison						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 202-566-1107				
						FAX Number:				
Contracting Official Name Noelle Mills						Branch/Mail Code:				
_____ (Signature) (Date)						Phone Number: 513-487-2171				
						FAX Number:				

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-11**

Title: Economic and Litigation Support for Steam Electric

Work Assignment Contracting Officer Representative (WACOR):

James C. Covington, III (MC-4303T)

Engineering and Analysis Division (EAD)

Office of Water, Office of Science and Technology

1200 Pennsylvania Avenue, N.W.

Washington, DC 20460

Phone: (202) 566-1034 Fax: (202) 566-1053

E-mail: covington.james@epa.gov

PWS Contract Section: 3.4 and 3.5

Estimated Level of Effort: 1,000 hours

Period of Performance: Issuance Date through June 30, 2018

Background:

The 1972 Clean Water Act (CWA) directs EPA to develop national technology-based regulations for categories of industries that discharge pollutants directly to surface waters (effluent guidelines) or that discharge pollutants indirectly through sewage treatment plants (pretreatment standards). The CWA also directs EPA to develop national technology-based regulations for new industrial facilities (new source performance standards). One of the factors specified by the CWA is that effluent guidelines and standards must be economically achievable.

In addition, under Executive Orders 12866 and 13563, EPA is required to estimate the potential benefits and costs to society. The purpose of this work assignment (WA) is to evaluate the costs, economic achievability, including those to small entities and benefits of revised regulations on the steam electric industry.

The contractor shall conduct all analyses requiring the collection and manipulation of data and models in accordance with the EPA approved quality assurance (QA) project plan that was developed for this work. The QA project plan shall describe the procedures for assuring the quality of the primary and secondary economic data used for this work assignment.

Performance Work Statement (PWS): The WACOR will review all deliverables in draft form and provide revisions and/or comments to the contractor. The contractor shall prepare the final deliverables incorporating the WACOR's comments.

Task 1: Prepare Workplan

The contractor shall develop a workplan to address all tasks in this work assignment. The workplan shall outline, describe and include the technical approach, resources, timeline and due dates for deliverables, a detailed cost estimate by task, and a staffing plan. If a subcontractor(s) is proposed and subcontractors are outside the metropolitan DC area, the contractor shall include information on plans to manage work and contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than \$100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency. Due to the nature of the work assignment, the contractor may be requested to revise the workplan in response to the WACOR's review comments and resubmit for approval.

Deliverable: Workplan - Per contract requirements

Task 2: Quality Assurance

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 and implementing guidance CIO-2105-P-01-0. All projects that involve the generation, collection, analysis, and use of environmental data must have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work. Examples of these environmental data operations are provided in **Table 1-1** below.

Table 1-1. Examples of work that involves the collection, generation, evaluation, analysis, or use of environmental data

Item	Examples
Data	Includes field sampling information (sample location information, flow measurements, temperature, pH, physical observations, etc.), laboratory measurements (e.g., chemical, physical, biological, radiological measurements), data collected from questionnaires, economic data, census data, and any other types of existing data (i.e., data generated for a different purpose or generated by a different organization)
Data generation	Includes field studies, laboratory studies, and generation of modeling output
Data collection	Includes field surveys, questionnaire surveys, literature searches, and third party data
Data evaluation	Includes data inspection, review, assessment, and validation
Data analysis	Includes statistical, engineering, and economic analysis, and testing, evaluation, and validation of methods and models; database creation, data extraction, and data manipulation
Data Use	Any use of data to support EPA decisions, regulations, policy, publications, or tools (including effluent guidelines, 304(m) program, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs)

Note that QAPPs are required for the development or revision of models and software that support the generation, collection, evaluation, analysis, or use of data. (A model is set of equations and assumptions used to predict unknown data.) When existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model and explain how it will be used and how its output will be evaluated to ensure the modeling effort meets the overall quality objectives for the project. Development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.

2.1 QA Project Plan Requirements

Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data under EPA Contract EP-C-16-011 in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the March 2017 pQAPP for existing data. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment (WA)-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

The activities in this work assignment involve gathering, evaluating, analyzing, and otherwise using existing environmental data (also known as "secondary" use of data). However, EPA has determined that the contractor is operating under the existing pQAPP and that the pQAPP addresses QA requirements for this work assignment. In support of this work assignment, the contractor shall ensure that the work plan provides enough detail to clearly describe:

- Specific objectives of the project(s) supported by this work assignment, including typical questions that must be answered when using existing sources of data to perform economic analyses in support of the Steam Electric Industry Guidelines.
- The type of data to be gathered or used under this work assignment to support the project objectives—including data from search engines, Federal databases, EPA databases—as well as a rationale for when those databases are appropriate and what data available in each will support the project
- The quality objectives needed to ensure the data will support the project objectives, and
- The QA/QC activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

Table 1-2 at the end of this QA task demonstrates how the pQAPP addresses QA requirements (based on previous work assignments 2-05 and 3-05).

2.2 Additional QA Documentation Required

The EPA Quality Manual for Environmental Programs (CIO 2105-P-01-0, May 2000) requires published Agency reports containing environmental data to be accompanied by a readily identifiable section or appendix that discusses the quality of the data and any limitations on the use of the data with respect to their originally intended application. The EPA Quality Manual

further requires Agency reports to be reviewed by the QA manager (or other authorized official) before publication to ensure that an adequate discussion of QA and QC activities is included. The purpose of the review is to ensure the reports provide enough information to enable a knowledgeable reader to determine if the technical and quality goals were met for the intended use of the data. Reports should include applicable statements regarding the use of any environmental data presented as a caution about possible misuse of the data for other purposes. For example, a Technical Support Document or Study Report must include a clear discussion of the quality management strategies (including the project goals and objectives, quality objectives and criteria, and QA/QC practices) that were employed to control and document the quality of data generated and used. These documents should also discuss any deviations from procedures documented in the EPA-approved QAPP(s) supporting the project, the reasons for those deviations, any impact of those deviations had on data quality, and steps taken to mitigate data quality issues.

In support of this Agency requirement, all major deliverables (e.g., Technical Support Documents, Study Reports, Analytical Methods) produced by the contractor under this work assignment must include a discussion of the QA/QC activities that were performed to support the deliverable, and this discussion must provide a sufficient level of detail to allow the EAD QA Coordinator (or designee) to determine if the QA/QC strategies implemented for the project sufficiently support the intended use of the data. Upon receipt, the WACOR will review each applicable report and certify whether the contractor has adhered to the QA requirements documented in the contractor's pQAPP.

The contractor shall also provide the WACOR with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered, deviations from the QAPP, and corrective actions taken. If desired, the contractor may include this as a part of the contract-required monthly financial/technical progress report.

2.3 Data Quality Act/Information Quality Guidelines Requirements

The Data Quality Act (also known as the Information Quality Act) requires EPA to ensure that influential information disseminated by the Agency is sufficiently transparent in terms of data and methods of analysis that the information is capable of being substantially reproduced. To support compliance with these data transparency/ data reproducibility requirements, EPA plans to include QAPPs as part of any rulemaking record documentation to be made available to the public. (This includes pQAPPs and sQAPPs.) The contractor may claim information in QAPPs as confidential; if the contractor chooses to do so, the contractor shall submit a sanitized (i.e., public) version and an unsanitized (i.e., confidential) version at the time the QAPP is submitted for approval by EPA. The sanitized version shall be included in the public docket for the applicable rulemaking (or other docket record), and the unsanitized version shall be included in a non-public (i.e., confidential) portion of the docket (or record).

Information contained in the approved QAPP shall be transparent and reproducible and meet the requirements of the Data Quality Act for influential information. EPA's *Guidelines for Ensuring*

and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency (EPA/260R-02-008, October 2002), referred to as “EPA’s Information Quality Guidelines,” describe EPA procedures for meeting Data Quality Act requirements. Section 6.3 of EPA’s Information Quality Guidelines indicate that “especially rigorous robustness checks” should be applied in circumstances where quality-related information cannot be disclosed due to confidentiality issues. Where applicable, the contractor shall indicate which results were obtained using the tools (SOPs, checklists, and guidelines) that the contractor designates as confidential so the WACOR can easily identify the areas that shall require rigorous robustness checks and document that those checks have been performed. At the discretion of the WACOR, the contractor may be requested to prepare pre-dissemination review checklist as described in Section 5.5 of the Office of Water Quality Management Plan, February 2009. If this is required, the WACOR shall notify the contractor through written technical direction.

Deliverables:

Monthly reports of QA work performed (may be included in the Contractor’s monthly progress report)	Due monthly throughout the WA period of performance
--	---

Task 3: Prepare Standardized Naming Convention and Version Control Memorandum

The contractor shall prepare and submit a memorandum that proposes a standardized naming convention and version control (SNCVC) for all deliverables associated with the WA. This system will ensure that deliverables are clearly named and dated and that the sequence of versions of a document is clear. The WACOR will review the memorandum and then provide the contractor with written notification of approval or edits that need to be made. The contractor shall prepare a revised SNCVC memorandum incorporating the WACOR’s comments, if required. After receiving notification of approval the contractor shall use this standardized convention for all deliverables associated with the work assignment. The WACOR may direct the contractor through written technical direction to amend the SNCVC memorandum at any point during the WA.

Deliverables:

- 3a. SNCVC memorandum due within 7 calendar days of workplan approval
- 3b. If required, revised memorandum due within 3 calendar days of receipt of comments from the WACOR, at technical direction of WACOR.

Table 1-2. Justification for Use of Existing pQAPP as the Sole Quality Documentation for Projects that Rely on Existing Data

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
A1. Title & Approval Sheet			
Project title	X		WA 4-05 Economic and Litigation support for the Steam Electric
Organization's name	X		Abt Associates
Effective date and/or version identifier	X		Page ii of PQAPP
Dated signature of Organization's project manager	X		Page ii of PQAPP
Dated signature of Organization's QA manager	X		Page ii of PQAPP
Other signatures, as needed (e.g., EAD Project Officer, EAD QA Coordinator)	X		Page ii of PQAPP
Revision History	X		Page ii of PQAPP
A2. Table of Contents			
Includes sections, figures, tables, references, and appendices	X		Page v of PQAPP
Document control information indicated (when required by the EPA Project Manager and QA Manager)	X		Page v of PQAPP
A3. Distribution List			
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization	X		2.1 pages 5-7 of PQAPP
A4. Project/Task Organization			
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.	X		Reference PQAPP section 2.1 on page 5. Referencing table 2.1 and descriptions on page 7 of PQAPPOST WACOR: James C. Covington, III
Organization chart shows lines of authority & reporting responsibilities	X		Reference PQAPP section 2.1 for overall picture
Project QA manager position indicates independence from unit collecting/using data	X		Reference PQAPP section 2.1 for overall picture
A5. Problem Definition/Background			
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested	X		PQAPP Section 2.2 – goal of program is to conduct economic analyses for ELGs See PQAPP table 2-2: cost-benefit and economic impact analysis, industry profiles, collection /preparation of reports, review and analysis of public comments, legislative and litigation support, database development and management, Also see WA
Identifies project objectives or goals	X		See WA
Historical & background information			
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives	X		Section 2.2 – goal of program is to conduct economic analyses for ELGs. See table 2-2 and above reference for specific analyses
A6. Project/Task Description			
List measurements to be made/data to obtain	X		Section 2.3 PQAPP
Notes special personnel or equipment requirements		x	
Provides work schedule		x	

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
A7. Overall Quality Objectives & Criteria			
States overall quality objectives and limits needed to support the project goals and objectives cited in A5	X		See 2.3 of PQAPP
A8. Special Training Requirements/ Certifications			
Identifies specialized skills, training or certification requirements	X		See 2.5 of PQAPP
Discusses how this training will be provided/the necessary skills will be assured and documented	X		See 2.5 of PQAPP
A9. Project-level Documents & Records			
Describes process for distributing the approved QAPP and other planning documents (and updates) to staff	X		See section 2 of PQAPP
Identifies final work products that will result from the project	X		Section 2.6 of PQAPP
Describes the process for developing, reviewing, approving, and disseminating the final work products and individuals responsible for these processes	X		Appendix A of PQAPP
B1. Data Needs			
Detailed list/description of the specific data elements needed to support project goals	X		See Section 3 Existing Data of PQAPP
Description of the scope of the data elements that you need (e.g., data supporting specific treatment options vs. the full range of options, data supporting the entire country vs. a specific geographic region)	X		See Section 3 of PSAPP
If project includes development or update of a project database, QAPP identifies and defines each database field		x	
B2. Potential Data Sources			
Identifies and describes potential sources of the existing data needed (e.g., photographs, topographical maps, facility or state files, census data, meteorological data, publications, etc.) and the rationale for their use	X		See Table 3.1 of PQAPP
If literature searches are used, describes the search engines that will be used and key search terms	X		See Table 3.1 of PQAPP
If databases or models will be used, describe the database (or model) in terms of who developed it and operates it and the type of data it contains	X		See table 3.2 of PQAPP
For other potential sources, describe the potential sources & rationale for considering or using each one		x	

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
B3. Criteria for Selecting Data Sources			
Identifies each criterion that will be used to determine if the candidate data sources listed in B2 will meet your needs, and how each criterion is defined. (Criteria vary by project; examples include reliability, age, applicability, quantity, format, and others)	X		PQAPP 3.1.3 Criteria for Selecting Data Sources
Explains rating system used to evaluate source against each criterion		x	
B4. Data Value Selection Approach			
For data sources that meet the criteria identified in B3: Describes the criteria and procedures that will be used to determine which value(s) identified in the acceptable sources are most appropriate for use in the project	X		Section 3.1.4 of PQAPP
For data that do not meet these pre-established criteria but are the only data available, explains how the decision to use such data will be made and documented		x	
B5. Resolving Data Gaps			
Describes the process for identifying and addressing data gaps that still exist after candidate data sources have been evaluated and appropriate data values have been identified	X		Section 3.1.5 of PQAPP
Describes the process that will be used to address any new data needs revealed during the data gathering process (i.e., additional data elements not previously considered)		x	
B6. Data Gathering Documentation and Records			
Describes how results of the source selection and the data value selection will be documented, including any sources or values that were rejected and the rationale for not using them	X		See Section 3.1.6
For data that are deemed acceptable and that will be used, explains how each data element will be associated to its original source citation (i.e., bibliographic information, telephone contact reports, email messages, etc.)	X		See Section 3.1.6
C1. Standardization of Data Elements			
Describes the process to ensure that units and other key measures are captured and standardized (or otherwise made comparable) in the database	X		See Section 3.2.1

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
If the project requires that all fields be standardized to a single set of units (e.g., US dollars for economic data, µg/L for chemical data), identifies the standard units that will be required for each data element	X		See Section 3.2.1
Identifies the procedures for converting data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly	X		See Section 3.2.1
If standardization of data elements is not needed, explains the process for ensuring that data presented in varying units are comparable enough for use in the project and that project staff members and other data users will be able to readily identify differences in units	X		See Section 3.2.1
C2. Data Entry			
Explains the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be used to ensure that the database accurately and completely captures the data as presented in the original source	X		See Section 3.2.2
C3. Merging or Uploading Electronic Data from Existing Sources			
If data are available electronically and will be uploaded or merged into the project database: describes the procedures that will be followed to ensure that errors are not introduced during the upload/merge process and that the final database reflects the original dataset(s)	X		See Section 3.2.3
C4. Data Review			
Describes the process for ensuring that the data have been recorded, transmitted, and processed correctly	X		See Section 3.2.4
C5. Data Storage and Manipulation			
Describes how the existing data will be stored	X		See Section 3.2.5
Describes who will be responsible for access to and maintenance of the stored data	X		See Section 3.2.5
Describes how the existing data will be incorporated with other project data to support the project goal/decision to be made	X		See Section 3.2.5

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
Describes the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation	X		See Section 3.2.5
D1. Data Quality Verification and Data Quality Reporting			
Describes the process for verifying that the final set of data meets the overall criteria originally specified for the project	X		Section 3.3.1
Describes how these determinations will be documented and reported	X		Section 3.3.1
For data that don't meet the pre-established specifications, explains the process for determining if they are usable and how such decisions will be documented	X		Section 3.3.1
D2. Use/Analysis of the Existing Data			
Provides details regarding the exact means in which the data will be used to meet project objectives	X		Section 3.3.2
Includes an explanation or list of the information to be calculated and the data elements that will be used to make those calculations	X		Section 3.3.2
Includes applicable calculations and equations (if known) or explanations of how they will be developed	X		Section 3.3.2
Includes plans for excluding outliers	X		Section 3.3.2
D3. Methodology Documentation and Conceptual Review			
If exact methodologies for analyzing the data will need to be developed or modified during the course of data analysis, explains the process by which such methodologies will be documented, who is responsible for reviewing/approving their use, and how the methodologies will be checked to ensure they yield the desired products	X		Section 3.2.3
D4. Technical Review of the Data Analysis			
Describes activities that will be used to ensure the data analyses are being implemented as specified and will support project objectives	X		Section 3.3.4
Explains procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting and implementing such changes	X		Section 3.3.4

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
D5. Final Verification of Data Analysis and Reconciliation with User Requirements			
Describes the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, and that the work product addresses the overall project goals and objectives	X		Section 3.3.5
Describes how the results of this assessment will be documented	X		Section 3.3.5
Describes how any limitations of the data or data analyses that were used to prepare the final work product will be documented and communicated	X		Section 3.3.5

Task 4: Provide Technical and Litigation Support for the Steam Electric Rulemaking Activities

The contractor shall provide technical support related to cost, economic achievability, benefit assessment to address litigation issues associated with the 2015 Steam Electric rulemaking. Such support may include responding to the Office of General Counsel (OGC) and the Department of Justice (DOJ) or management with questions about economic issues, preparing briefing and meeting materials (which may include but are not limited to short briefing documents and PowerPoint presentations). The contractor may be requested to participate in and/or conduct briefings, and assist Agency economists in their review of analyses conducted by EPA and its contractor, providing technical review of materials prepared for the 2015 rulemaking.

Once the WACOR reviews the draft materials and provides revisions and/or comments to the contractor, the contractor shall prepare a final version of the materials incorporating the WACOR's comments.

Deliverables:

The final date for material will be ongoing as directed by technical direction, but no later than June 30, 2018.

4a. Draft deliverables are due 7 days after Technical Directions.

Task 5: Draft-Revision to Economic and Regulatory Analysis Report (RIA)

As part of EPA's reconsideration of the 2015 steam electric rule, the contractor shall conduct analyses to support possible revision to the regulatory options and compliance timeframe. These analyses shall assess the private and societal benefits, costs as well as economic achievability throughout the economy.

The contractor shall be prepared to revise the IPM baseline to incorporate recent shut-downs and also to account for changes to the Clean Power Plan (CPP) and Coal Combustion Residuals (CCR) rulemaking prior to performing analysis for the steam electric rulemaking options. Economic analyses shall be performed in a manner prescribed by U.S. EPA “Guidelines for Preparing Economic Analyses” (2010) and OMB Circular A-4, “Regulatory Analysis”.

The contractor shall use the Integrated Planning Model (IPM) to assess the economic impact of the Steam Electric rulemaking on the Electric industry. The contractor shall be prepared to perform 2 model runs of IPM to determine impacts. The contractor shall also draft a revised RIA referring the revised analyses. Once the WACOR reviews the draft materials and provide revisions and comments to the contractor, the contractor shall prepare a final version of the material incorporating the WACOR’s comments.

Deliverables:

The WACOR may ask for a revisions and revised RIA to be delivered at any point, the deliverables under this task is due within 7 days after technical direction received from the WACOR; The final date for material will be ongoing as directed by technical direction, but no later than June 30, 2018.

Task 6: Draft-Revision to Cost Benefit Analysis Report (BCA)

The contractor shall evaluate information required for EPA assessments of the total cost of compliance that may be incurred by a community for regulatory options, as well as the cost that may be incurred by local, State, and federal governments, and by society as a whole. Similarly, the contractor shall provide data required for the EPA's assessment of the benefits of the Steam Electric guideline options to society. These analyses may include environmental benefits, health benefits, environmental justice, recreational benefits, benefits of ecosystem services, and other ecological benefits.

Deliverables:

The WACOR may ask for a version to be delivered at any point, the deliverables under this task is due within 7 days after technical direction received from the WACOR; The final date for material will be ongoing as directed by technical direction, but no later than June 30, 2018.

Task-7 Draft- Revision Final Analysis and reports of Other Statutory/EO Requirements

The contractor shall provide support for the analyses required under statutes such as Unfunded Mandates Regulatory Act (UMRA) and the National Technology Transfer and Advancement Act (NTTAA), among others; Executive Orders (EOs) such as Federalism, Protection of Children’s Health, Consultation and Coordination with Indian Tribal Governments; Environmental Justice; and Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use; among others. The contractor shall also provide support for the Administrator’s priorities. The EPA shall make all decisions related to the applicability of these statutes and EOs to its actions.

Deliverables:

The WACOR may ask for version to be delivered at any point, the deliverables under this task is due within 7 days after technical direction received from the WACOR.

The final dates for material will be ongoing as directed by technical direction, but no later than June 30, 2018.

At least 1 draft memo and analysis will be due 7 days after technical directions, no later than June 30, 2018.

The WACOR may ask for a version to be delivered at any point, the deliverables under this task is due within 7 days after technical direction received from the WACOR.

The final date for any draft-revision benefit analysis will be ongoing as directed by technical direction, but no later than June 30, 2018.

General Requirements of the Work Assignment and Schedule

Confidential Business Information: During the course of the work assignment, the contractor shall be accessing and evaluating CBI. As such, the contractor shall adhere to EPA's CBI policy and procedures as described in the contract clauses (Clauses H.15-H19 and H.21). The contractor must maintain CBI security clearance to use CBI information. The contractor shall not disclose any CBI to anyone other than EPA without prior written approval from the WACOR. The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in our "Office of Science and Technology Confidential Business Information Application Security Plan" (August 2011) or its successor approved plans.

Budget Reporting: The contractor shall report to the WACOR and Project Officer (PO) when 80 percent of the total budget for this work assignment has been depleted.

Identification as Contracting Staff: To avoid the perception that contractor personnel are EPA employees, the contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and prior to the start of any meeting. The contractor personnel are prohibited from acting as the Agency's official representative. When speaking with the public, the contractor shall refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities: The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. These drafts will clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support any conclusions and recommendations. The contractor shall incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor shall adhere to all applicable EPA management control procedures as implemented by

the EPA Contracting Officer (CO), Project Officer (PO), and WACOR.

Quick Response: Under this Performance Work Statement (PWS), the contractor may be required to provide information for use by EPA for quick responses and analyses of options, issues, and policy decisions. Quick responses are those which require completion in one to five working days.

Travel: No travel is anticipated for this work assignment.

Deliverable Formatting: All memos, draft comments, summaries and responses, and chapters are to be provided in electronic form using Word and/or Excel/Access, ArcView, or, in special cases another software program agreed to by the WACOR. Memos are to be written in a manner which will make them easy to conform into draft chapters for the Final Report. For deliverables that are in Word or pdf versions of Word documents, that are intended to be shared with management or the public, the contractor shall use decimal align in all tables containing columns of numbers of varying digits, whether decimal places are reported or not. All final materials, e.g., memos, chapters, etc. are to be prepared only after receiving written technical direction from the WACOR and formatted to be in compliance with Section 508 Amendment to the Rehabilitation Act of 1973.

Deliverables

Schedules

Task 1: Prepare Workplan

Per contract requirements

Task 2: QA Deliverables

Monthly reports of QA work performed (may be included in the Contractor's Monthly progress report)

Due Monthly throughout the WA period of performance

Task 3: SNCVC Memorandum

3a. Prepare SNCVC memorandum

Due within 7 calendar days of workplan approval

3b. If required, revised memorandum

Due within 3 calendar days of receipt of comments from the WACOR, at technical direction of WACOR

Task 4: Provide Technical and Litigation Support

The final date for material will be ongoing as directed by technical direction

Due no later than June 30, 2018

4a. Draft deliverables

Due 7 days after Technical Directions.

Task 5: Draft-Revision to Economic and RIA

The WACOR may ask for a revisions and revised RIA to be delivered at any point,

Due within 7 days after technical direction received from the WACOR

The final date for material will be ongoing as directed by technical direction

Due no later than June 30, 2018

Task 6: Draft-Revision to Cost Benefits Report

The WACOR may ask for a version to be delivered at any point

Due within 7 days after technical direction received from the WACOR

The final date for material will be ongoing as directed by technical direction

Due no later than June 30, 2018

Task 7: Draft- Revision Final Analysis and Reports of Other Statutory and EOs

The WACOR may ask for version to be delivered at any point

Due within 7 days after technical direction received from the WACOR

The final dates for material will be ongoing as directed by technical direction

Due no later than June 30, 2018

At least 1 draft memo and analysis

Due 7 days after technical directions, no later than June 30, 2018

The WACOR may ask for a version to be delivered at any point

Due within 7 days after technical directions received from the WACOR

The final date for any draft-revision benefit analysis will be ongoing as directed by technical direction

Due no later than June 30, 2018

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-11				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000001				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018			Title of Work Assignment/SF Site Name				
			Base Option Period Number 1			Econ Steam				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW 3.5 and 3.4					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 08/04/2017 To 06/30/2018					
Comments:										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE:				
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:					Cost/Fee			LOE:		
Cumulative Approved:					Cost/Fee			LOE:		
Work Assignment Manager Name James Covington							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1034			
							FAX Number:			
Project Officer Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Contracting Official Name Greta N. Perry							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2331			
							FAX Number:			

**PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #1-11 Amendment 1**

Title: Economic and Benefits support for Steam Electric

Work Assignment Contracting Officer Representative (WACOR):

James C. Covington, III(MC-4303T)
Engineering and Analysis Division (EAD)
Office of Water, Office of Science and Technology
1200 Pennsylvania Ave, N.W.
Washington, DC 20460
Phone (202) 566-1034 Fax (202) 566-1053
E-Mail: Covington.James@epa.gov

Alternate WACOR:

Ashely Allen
(202) 566-1012
E-Mail: Allen.Ashely@epa.gov

Period of Performance: Date of Issuance through June 30, 2018

Contractor PWS Section: 3.4 and 3.5

Purpose of Amendment: The purpose of this work assignment amendment is to add travel support. Travel for up to three trips have been added to support Task 5 and 6. Travel details will be provided by the WACOR. All other Tasks and deliverables remain the same, no change. The contractor shall submit a revised cost estimate within 5 days after receipt of this amendment.

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-11				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000002				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018			Title of Work Assignment/SF Site Name				
			Base Option Period Number 1			Steam Electric				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW 3.4 and 3.5					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval					Period of Performance From 08/04/2017 To 06/30/2018					
Comments: Increase Workplan Funding Ceiling from \$100k to \$118k.										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> (Max 2) Note: To report additional accounting and appropriations date use EPA Form 1900-69A.										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE:				
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:					Cost/Fee			LOE:		
Cumulative Approved:					Cost/Fee			LOE:		
Work Assignment Manager Name James Covington _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 202-566-1034			
							FAX Number:			
Project Officer Name Shirley Harrison _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number:			
							FAX Number:			
Contracting Official Name Sandra Stargardt-Licis _____ (Signature) (Date)							Branch/Mail Code:			
							Phone Number: 513-487-2006			
							FAX Number:			

EPA United States Environmental Protection Agency Washington, DC 20460 Work Assignment						Work Assignment Number 1-11				
						<input type="checkbox"/> Other <input checked="" type="checkbox"/> Amendment Number: 000003				
Contract Number EP-C-16-011			Contract Period 11/01/2016 To 06/30/2018 Base Option Period Number 1			Title of Work Assignment/SF Site Name Steam Electric				
Contractor ICF Incorporated, L.L.C.					Specify Section and paragraph of Contract SOW 3.4 and 3.5					
Purpose: <input type="checkbox"/> Work Assignment <input type="checkbox"/> Work Assignment Close-Out <input checked="" type="checkbox"/> Work Assignment Amendment <input type="checkbox"/> Incremental Funding <input type="checkbox"/> Work Plan Approval						Period of Performance From 08/04/2017 To 06/30/2018				
Comments: The Workplan 1-11 is Fully Funded at \$282,943										
<input type="checkbox"/> Superfund Accounting and Appropriations Data <input checked="" type="checkbox"/> Non-Superfund										
SFO <input type="checkbox"/> Note: To report additional accounting and appropriations date use EPA Form 1900-69A. (Max 2)										
Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										
Authorized Work Assignment Ceiling										
Contract Period:		Cost/Fee:				LOE:				
11/01/2016 To 06/30/2018										
This Action:										
Total:										
Work Plan / Cost Estimate Approvals										
Contractor WP Dated:				Cost/Fee			LOE:			
Cumulative Approved:				Cost/Fee			LOE:			
Work Assignment Manager Name James Covington							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1034			
							FAX Number:			
Project Officer Name Shirley Harrison							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 202-566-1107			
							FAX Number:			
Other Agency Official Name							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number:			
							FAX Number:			
Contracting Official Name Sandra Stargardt-Licis							Branch/Mail Code:			
_____ (Signature) (Date)							Phone Number: 513-487-2006			
							FAX Number:			